WHAT IS CLAIMED IS:

1. A mask pattern correction method used to form a desired pattern on a wafer by a projection optical system, comprising:

5   the step of extracting a correction target edge from a mask design pattern;

the step of calculating the distance from the correction target edge to a nearest edge of an adjacent pattern;

10   the step of calculating the correction value according to pattern layout within a given range originated from the correction target edge by a simulation when the distance calculated in previous step is smaller than a given critical value;

15   the step of moving the correction target edge on the basis of the correction value calculated by the simulation;

the step of calculating the moving amount of the correction target edge on the basis of an correction

20   value set as a rule in advance when the distance calculated in previous step is not smaller than the critical value; and

the step of correcting the mask design pattern on the basis of the calculated moving amount.

25   2. A method according to claim 1, wherein the simulation uses a light intensity simulation technique.

3. A method according to claim 1, wherein the

correction value set as a rule represents as a parameter at least one of a size of a pattern including the correction target edge, a distance between the correction target edge and a pattern adjacent to the

5   correction target edge, and a size of the pattern adjacent to the correction target edge.

4. A mask pattern correction method used to form a desired pattern on a wafer by a projection optical system, comprising:

10   the step of extracting a correction target edge from a design pattern;

the step of calculating a length of the extracted correction target edge;

the first step of calculating correction value

15   determined one-dimensionally by pattern layout perpendicular to the correction target edge when the length of the correction target edge calculated in the previous step is not smaller than a predetermined critical length; and

20   the second step of calculating correction value determined two-dimensionally by pattern layout around the correction target edge when the length of the correction target edge calculated in the previous step is smaller than a predetermined critical length,

25   the first step including:

the distance calculation step of calculating a distance S from target edge to a nearest edge of

a adjacent pattern perpendicularly;

the step of calculating the correction value by one-dimensional simulation according to pattern layout perpendicular to the correction target edge, moving the correction target edge on the basis of the calculated correction value when the calculated distance S is smaller than a predetermined critical value S'; and

the step of moving the correction target edge on the basis of an correction value set as a rule in advance using as a parameter at least one of the distance S, a line width W of the pattern including the correction target edge, and a line width W' of a pattern including an edge adjacent to the correction target edge when the calculated distance S is not smaller than the critical value S', and

the second step including:

the distance calculation step of calculating a distance sp from the correction target edge to a nearest edge in the perpendicular direction, and calculating a distance sh to a nearest edge in the direction of length;

the step of calculating the correction value by two-dimensional simulation according to pattern layout around the correction target edge, and moving the correction target edge on the basis of the calculated correction value when at least either one of the distances sp and sh calculated in the distance

calculation step is smaller than a corresponding one of predetermined distances sp' and sh'; and

the step of moving the correction target edge on the basis of an edge moving amount set as a rule in advance using as a parameter at least one of the distances sp and sh, the line width W of the pattern containing the correction target edge, and line widths wp and wh of patterns adjacent to the correction target edge when the calculated distance sp is not smaller than the critical distance sp', and the calculated distance sh is not smaller than the critical distance sh'.

5. A mask pattern creation system including a mask design pattern correction method used to form a desired pattern on a wafer by a projection optical system, comprising:

a correction target edge extraction unit for extracting a pattern having a correction target edge from a design pattern;

a space width calculation unit for calculating a distance from the correction target edge to a nearest edge of an adjacent pattern;

a simulation calculation unit for calculating the correction value according to pattern layout within a given range originated from the correction target edge by a simulation in accordance with a pattern layout present within a given range determined by the

correction target edge when a space width calculated
by said space width calculation unit is smaller than
a predetermined critical value;

a rule-based moving amount calculating unit for
moving the correction target edge on the basis of
an correction value set as a rule in advance when the
distance calculated by said distance calculation means
is not smaller than the critical value; and

a correction unit for correcting the design
pattern on the basis of the moving amount of the
correction target edge calculated by said simulation
moving amount calculation unit or said rule-based
moving amount calculation unit.

6. A system according to claim 5, wherein the
simulation uses a light intensity simulation technique.

7. A system according to claim 5, wherein
the correction value set as a rule represents as
a parameter at least one of a size of a pattern
containing the correction target edge, a distance
between the correction target edge and a pattern
adjacent to the correction target edge, and a size of
the pattern adjacent to the correction target edge.

8. A computer-readable recording medium which
records a program for causing a computer to realize a
mask pattern correction method used to form a desired
pattern on a wafer by a projection optical system,

wherein the program causes the computer to

realize:

a function of extracting a correction target edge from a design pattern;

a distance calculation function of calculating a distance from the correction target edge to a nearest edge of an adjacent pattern;

a moving amount calculation function of calculating an correction value by a simulation when the distance calculated by the distance calculation function is smaller than a predetermined distance;

a function of moving the correction target edge on the basis of the correction value calculated by the moving amount calculation function; and

a function of moving the correction target edge on the basis of an correction value set as a rule in advance when the distance calculated by the distance calculation function is not smaller than the predetermined distance.